

ANGULAR ANISOTROPY OF INTERMEDIATE ENERGY NUCLEON-INDUCED FISSION OF Pb ISOTOPES AND Bi

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The results of the measurements of the coefficients of anisotropy of proton-induced fission of $^{204,206,207,208}\text{Pb}$ and ^{209}Bi at the proton energies 48, 98 and 177 MeV are presented. The measurements have been carried out at The Svedberg Laboratory, Uppsala, Sweden, with the use of thin-film breakdown counters [1].

Data for ^{204}Pb are obtained for the first time. The others supplement essentially the results of other work in this energy region. The dependence of the coefficients of anisotropy on proton energy is estimated in the frame of the standard statistical model [2,3] taking into account characteristics of interim compound nuclei formed in the process of the interaction of protons with lead and bismuth nuclei. The latter are calculated in the frame of the code TALYS [4], for which a comparison with experimental values of anisotropy is a new form of testing and verification.

It is concluded that the calculated results agree with the experiment. The values of the coefficients of anisotropy for ^{204}Pb and ^{207}Pb are calculated in the proton energy region 25 - 50 MeV where experimental data are absent. In addition, the values of the coefficients of anisotropy for neutron-induced fission are predicted.

Special interest is indicated on measurement of the anisotropy of fission in reaction $^{207}\text{Pb}(n,f)$ in the energy region of 20 - 40 MeV, where the contribution of first-chance fission exceeds 70% according to calculations by TALYS, i.e., the fission of the doubly magic nucleus ^{208}Pb is playing an important role.

1. V. P. Eismont. Final Project Technical Report of ISTC 1309-99.
2. H. Halpern V. M. Strutinskiy, Proc. of the Second United Nations Int. Conf. on Peaceful Uses of Atomic Energy, Geneva, Switzerland, 1958, (United Nations, Geneva, Switzerland, 1958) p.408
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